

4/13/99

AN 1999:236585 CAPLUS  
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 TI Epoxy resin compositions and semiconductor devices sealed therewith  
 IN Ueda, Shigehisa  
 PA Sumitomo Bakelite Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 15 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM C08L063-00  
 ICS C08G059-24; C08G059-32; C08G059-40; C08G059-62; C08K003-36;  
 H01L023-29; H01L023-31  
 CC 38-3 (Plastics Fabrication and Uses)  
 Section cross-reference(s): 76  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11100490	A2	19990413	JP 1997-263953	19970929

PI The compns. comprise (A) .gtoreq.1 epoxy resins selected from  
 AB multifunctional epoxy resins  $\text{GOC6H4-mRm}[\text{CH}[\text{C6H4-n(Rn)OG}]\text{C6H3-m(Rm)(OG)}]_l\text{H}$   
 (I) and  $\text{MeC}[\text{C6H4-n(Rn)OG}]_2\text{-p-C6H4CMe2Q1G}$  (R = halo, Cl-12 alkyl; G =  
 glycidyl; Q1= Rn-substituted 1,4-phenylene; l = 1-10; m = 0-3; n = 0-4)  
 and/or cryst. epoxy resins with m.p. 50-150.degree. of 4,4'-biphenol  
 diglycidyl ether, hydroquinone diglycidyl ether, 4,4'-stilbenediol  
 diglycidyl ether, 4,4'-methylenediphenol diglycidyl ether, their halo  
 and/or Cl-12 alkyl derivs., and Q2(CH2-p-C6H4CH2Q3)1H (Q2, Q3 =  
 4,4'-biphenol diglycidyl ether group, its halo and/or Cl-12 alkyl deriv.;  
 l = 1-10), (B) phenolic resin curing agents  $\text{HOC6H4-mRm}[\text{CH}[\text{C6H4-n(Rn)OH}]\text{C6H3-m(Rm)(OH)}]_l\text{H}$  (II) R, m, n, and l are same as above), (C)  
 curing accelerators, and (D) fused SiO2 powders, content of U and Th

being

14 .ltoreq.2 ppb. Substantially only semiconductor element-mounted side of  
 15 substrate is sealed with the compns. The semiconductor devices have  
 excellent reliability. Thus, a compn. of (I) (m, n = 0; Epikote 1032H)

4.3, 3,3',5,5'-tetramethyl-4,4'-biphenol diglycidyl ether (YX 4000H) 4.3, (II)  
 (m, n = 0; MEH 7500) 4.4, Ph3P 0.2, fused SiO2 (0.1 ppb U, 0.1 ppb Th)  
 86.0, carnauba wax 0.5, and carbon black 0.3 part showed spiral flow 80

cm

and was transfer molded to give a ball grid array package showing reduced  
warpage and good solder heat and thermal shock resistance.

ST epoxy resin semiconductor packaging warpage redn; thermal shock  
 resistance  
 epoxy resin semiconductor; solder heat resistance epoxy resin  
 semiconductor; uranium free semiconductor packaging epoxy resin; thorium  
 free semiconductor packaging epoxy resin

IT Phenolic resins, uses  
 RL: MOA (Modifier or additive use); RCT (Reactant); RACT (Reactant or  
 reagent); USES (Uses)

(crosslinking agent; epoxy resin compns. for semiconductor device  
 packaging with good reliability)

IT Electronic packaging materials

Heat-resistant materials

Semiconductor devices

(epoxy resin compns. for semiconductor device packaging with good  
 reliability)

IT Phenolic resins, uses

Phenolic resins, uses

RL: DEV (Device component use); IMF (Industrial manufacture); POF  
 (Polymer  
 in formulation); PRP (Properties); PREP (Preparation); USES (Uses)  
 (epoxy; epoxy resin compns. for semiconductor device packaging with  
 good reliability)

IT Epoxy resins, uses  
 Epoxy resins, uses  
 RL: DEV (Device component use); IMF (Industrial manufacture); POF  
 (Polymer  
 in formulation); PRP (Properties); PREP (Preparation); USES (Uses)  
 (phenolic; epoxy resin compns. for semiconductor device packaging with  
 good reliability)

IT Crosslinking agents  
 (triphenolmethane-type phenolic resins; epoxy resin compns. for  
 semiconductor device packaging with good reliability)

IT **112755-07-4**  
 RL: MOA (Modifier or additive use); RCT (Reactant); RACT (Reactant or  
 reagent); USES (Uses)  
 (crosslinking agent; epoxy resin compns. for semiconductor device  
 packaging with good reliability)

IT **174882-88-3P**, Epikote 1032H 223591-58-0P 223591-59-1P  
 223591-60-4P 223591-61-5P 223591-62-6P 223596-22-3P  
 RL: DEV (Device component use); IMF (Industrial manufacture); POF  
 (Polymer  
 in formulation); PRP (Properties); PREP (Preparation); USES (Uses)  
 (epoxy resin compns. for semiconductor device packaging with good  
 reliability)

IT 222053-12-5  
 RL: DEV (Device component use); POF (Polymer in formulation); PRP  
 (Properties); USES (Uses)  
 (phenolic resin-crosslinked; epoxy resin compns. for semiconductor  
 device packaging with good reliability)

IT 60676-86-0, Fused silica  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES  
 (Uses)  
 (with regulated uranium and thorium; epoxy resin compns. for  
 semiconductor device packaging with good reliability)